UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,342	12/28/2001	Fergus O'Brien	27795-00025	5883

23932 7590 09/07/2005

JENKENS & GILCHRIST, PC
1445 ROSS AVENUE
SUITE 3200
DALLAS, TX 75202

EXAMINER	
STRANGE, AARON N	
ART UNIT	**PAPER NUMBER**
2153	

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/030,342	O'BRIEN ET AL.	
	Examiner	Art Unit	
	Aaron Strange	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/20/2005 have been fully considered but they are not persuasive.

2. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., designed and connected according to the small-world principle) (Page 7, Line 23 to Page 8, Line 7 of Remarks) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim 1 merely claims a system comprising nodes formed in a plurality of clusters, and cross links between the clusters that are selected so that the system has a high degree of clustering in combination with a low average path length between nodes. Such a system is clearly shown by Annapareddy, which shows nodes grouped into clusters (Fig 2) and cross links that result in a low average path length between nodes (the longest path length shown in figure 2 appears to be 5, with most path lengths less than 3).

3. With regard to claims 4 and 5, and Applicant's assertion that "it is not merely a matter of preference to adjust the parameters of a network in accordance with the

invention of claims 4 and 5 in order to obtain an average path length of less than 2.0, and more particularly between 1.5 and 1.7. Rather these values have been specifically determined by the inventors of the present invention to be particularly advantageous in the implementation of highly scalable systems." (Page 9, Lines 19-23 of Remarks), it is noted that Applicant has failed to provide any evidence supporting such an assertion.

Nothing in the specification discloses that these parameters have been determined "to be particularly advantageous", and certainly does not disclose how such a determination was made. The only description in the present specification describes an embodiment in which the mean connectivity falls in the range of about 1.5 to about 2.0, and preferably about 1.6 (Page 7, Lines 16-25 of present application). No disclosure accompanies this section which supports the assertion that an average path length of less than 2.0 and more particularly 1.5-1.7 is "particularly advantageous". Therefore, Applicant's arguments with regard to claims 4 and 5 are not persuasive.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "high degree of clustering" in claims 1,6, and 7 is a relative term which renders the claim indefinite. The term "high degree of clustering" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear what degree of clustering must be present to constitute a "high degree" of clustering.

7. The term "low average path length" in claims 1,6, and 7 is a relative term which renders the claim indefinite. The term "low average path length" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear how long the average path length may be without exceeding a "low average path length".

The only guidance found on the specification states that "an acceptable result in terms of the number of hopes per inter-process message, from a system process point of view, is under two" (Page 7, Lines 14-15 of Specification). However, claim 4 defines the average path length as under 2.0, so it is unclear what range of values is acceptable when the average path length is merely "low".

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Annapareddy (US 5,602,839).

10. With regard to claim 1, Annapareddy discloses a system comprising a plurality of computing nodes (Col 5, Lines 45-47)(Fig 2, n1, n2, etc) interconnected to form a plurality of node clusters (groups), wherein cross links are provided between said clusters (Col 5, Lines 53-59 and Fig 2), the cross-links being selected such that the system has a high degree of clustering of nodes in combination with a low average path length between nodes (the longest path length shown in figure 2 appears to be 5, with most path lengths less than 3).

11. With regard to claim 2, Annapareddy further discloses that the cross-links between the node clusters are selected at random (Col 5, Lines 53-59 and Fig. 2).

12. With regard to claim 3, Annapareddy further discloses that the node clusters are fully interconnected (each node in a group connects to all others in the group) (Fig 2).

13. With regard to claim 7, Annapareddy discloses a scalable computer system comprising a plurality of computing nodes interconnected according to the small world

principle, whereby the system is characterized by a high degree of clustering of nodes in combination with a low average path length (Col 5, Lines 35-59 and Fig 2).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Annapareddy et al. (US 5,602,839) in view of Watts et al.

16. With regard to claims 4 and 5, while the system disclosed by Annapareddy shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the average path length between the nodes is less that 2.0, or, more specifically, between 1.5 and 1.7.

Watts teaches that adjusting parameters of a small-world network results in changes in the characteristic path length. Adding a few cross-links results in a large drop in the path length (Fig 2), while substantially maintaining the clustering of the network. It would have merely been a matter of preference to a designer of the system to adjust the parameters of the network to obtain any desired mean connectivity, such one between 1.5 and 1.7.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the number of cross links to obtain a mean connectivity of 1.5-1.7 or any mean connectivity desired by the designer of the system, based on the intended goal of the system.

17. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Annapareddy et al. (US 5,602,839) in view of Brewer et al. (US 5,859,975).

18. With regard to claim 6, while the system disclosed by Annapareddy shows substantial features of the claimed invention including:

a large scale computer system including a multiplicity of nodes (Col 5, Lines 45-47)(Fig 2, nl, n2, etc), said nodes being arranged in a network with neighboring sets of nodes of the network forming clusters of fully interconnected nodes (groups) (Col 5, Lines 38-40), wherein cross-links are provided between nodes of different clusters in the network (Col 5, Lines 53-59 and Fig 2), the cross-links being selected at random to provide a high degree of clustering of nodes in combination with a low average path length between nodes, whereby each node of the system can communicate effectively with other nodes regardless of their location in the network and without full connectivity in the network (any node can reach any other node in 4 hops or less) (Fig 2). However, Annapareddy fails to disclose that each node has a plurality of interconnected processors.

Brewer discloses that the use of multiple processors in a single node of a

distributed system is well-known in the art (Col 1, Lines 26-31). The use of multiple processors in a single node allows that node to process more information than it would be capable with only a single processor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a plurality of interconnected processors in each node since it would have allowed the nodes to process more information that they would be capable of processing with only a single processor.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Strange whose telephone number is 571-272-3959. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AS
8/31/05

Dung C. Dinh
Primary Examiner